


# AL330B-EVB-A1
# Digital LCD Display SOC
# Evaluation Board
## User Manual
### Version 1.0



Document Number: 1-M-PAE033-0101

# Amendments

| Date | Version | Comments | Author |
|---|---|---|---|
| 2012-10-31 | 1.0 | Public Release | Ken Liu |
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# TABLE OF CONTENTS



# 1. Introduction

The AL330B EVB is an evaluation product using AverLogic chips to demonstrate a total solution for Small to Medium Digital LCD Display applications. This EVB product can accept multiple video inputs (Composite video and Components Video), which can then be displayed in high quality on an LCD Screen.

The main component is the AL330B chip, a highly integrated Display SOC, containing a 3-Ch + 10-bit ADC, 2D Video Decoder, Deinterlacer, Scaler, Microcontroller, OSD, and TCON. The AL330B can support small to medium Digital TFT-LCD Panels and small to medium AMOLED Display Devices. This product contains 1 Mbit of serial flash for customizable boot and code storage.

The AL330B is a multi-channel analog preprocessing circuit, which includes Source Selection; anti-aliasing filter; ADC, ACC (Auto-Clamp Control) and AGC (Auto-Gain Control); CGC (Clock Generation Circuit); digital multi-standard decoder containing chrominance and luminance separation from an adaptive 2D comb filter; brightness, contrast, hue and saturation control circuit; programmable horizontal and vertical scaler; image and sharpness enhancement processing; On-Screen-Display; programmable TCON; and a digital RGB signal output and more.

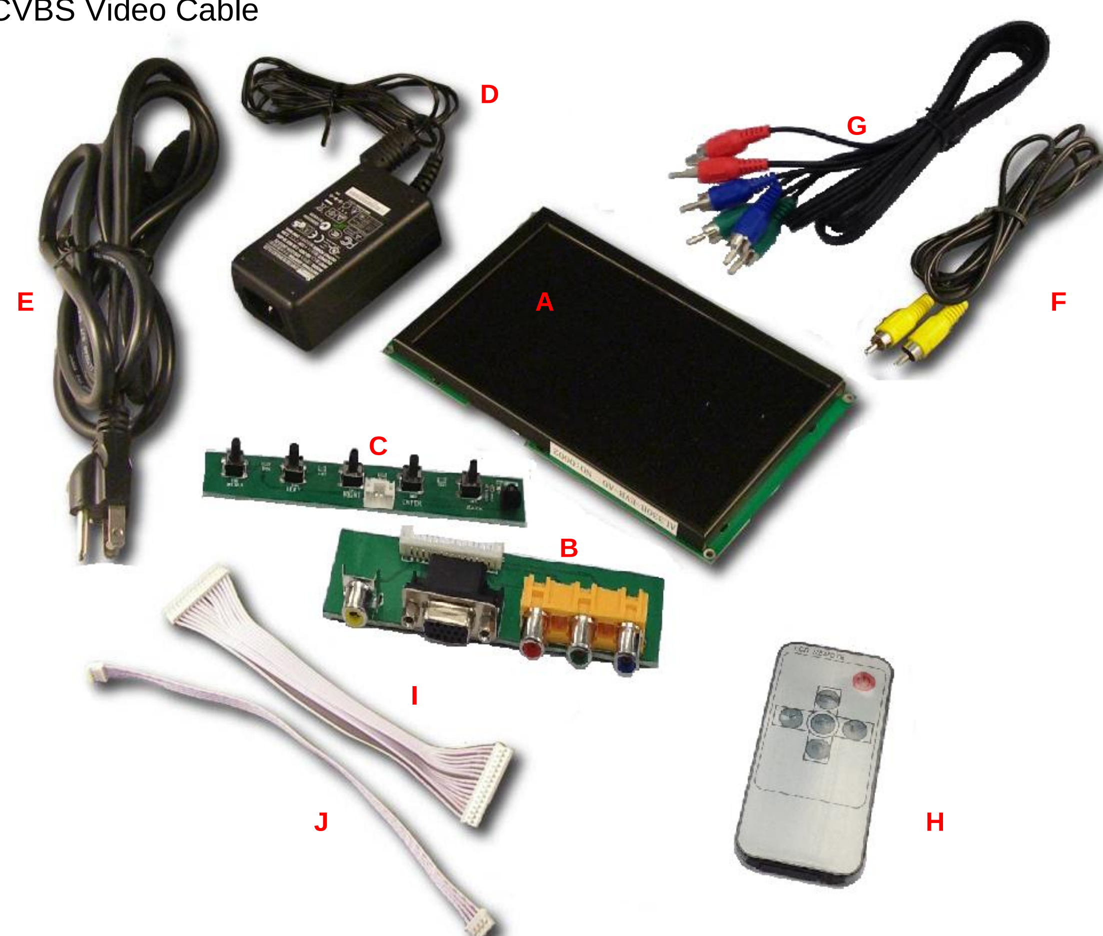
AverLogic can also provide ISP Tools for development and a Converter board for adapting different types of display panels for use with the AL330 EVB. Please contact your representative for more information.

# 2. Package Contents

The AL330B-EVB-A1 package contains the following components:

A. Mainboard (with LCD display)
B. Source Input Board
C. Keypad Board
D. 12V Power Adapter
E. AC Power Cord
F. CVBS Video Cable
G. Component (YPbPr) Cable
H. Remote controller
I. Source Input Board cable
J. Keypad Board cable
K. User Manual (not shown)




If any components are missing or damaged, please contact your representative.

**Note**: To test this product, you will need to provide a Video Source (e.g. camera, DVD player) with a YPbPr or CVBS connector.

# 3. General Product Description

The AL330B-EVB-A1 is comprised of a Mainboard with an LCD Panel attached to one face of the board. Ribbon cables are used to attach a Source Input board and a Keypad board. The backside of the Mainboard contains ribbon cable connectors, a power connector, an on/off switch; it also contains several jumpers that will be explained later.

Mainboard

LCD Panel

Source Input Board

Keypad Board

Power Connector

Ribbon Cables connectors

On/Off Switch

Mainboard (backside)

## 3.1 Specifications

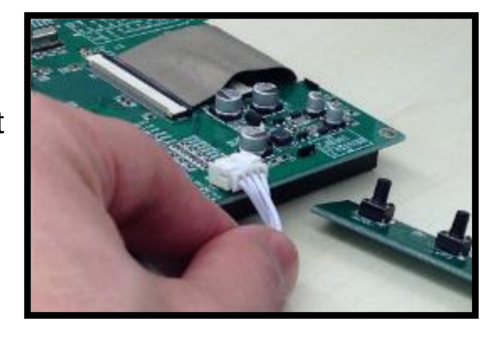
- **Video standard support**
  - NTSC
  - PAL
- **Video Input Formats**
  - Composite
  - Component
- **Output Formats**
  - 24-bit RGB signal
- **Output resolution supports:**
  - 800*480
- **EVB Functionality**
  - Multiple video inputs
  - PAL/NTSC auto detection
  - Manual adjustment of brightness
  - Internal OSD overlay with programmable font for OSD display

**Note**: Please be aware that this is an Evaluation product only and not all functional capabilities of AverLogic components are fully demonstrated. Please refer to the AverLogic website (www.averlogic.com) or contact your AverLogic representative for more information (see last page of this document).

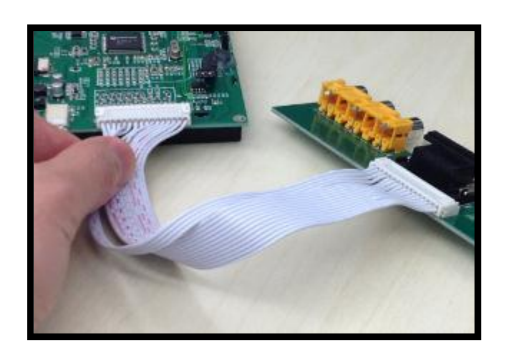
# 4. Quick Setup

This quick setup section will guide you through the AL330B-EVB-A1 setup. You will need to provide a video source with a CVBS or YPbPr (480i/576i) connection. In this quick guide, we will use a standard definition video camera as the example video source.

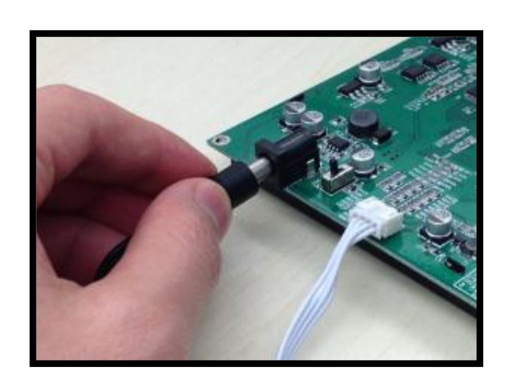
**Step 1**: Attach the 4-wire Keypad board cable to the Mainboard and the Keypad board. The connectors will attach in one direction only; do not try to force the cable connector onto the board connector.



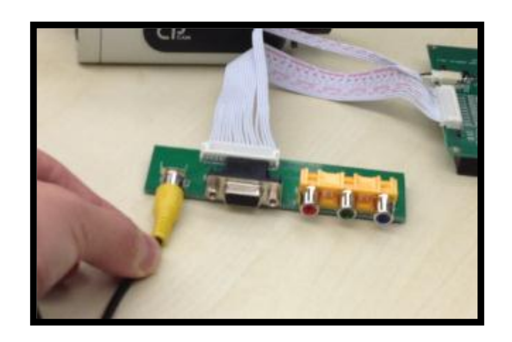
**Step 2:** Attach the wider ribbon cable (Source Input board cable) to the Mainboard and the Source Input board.



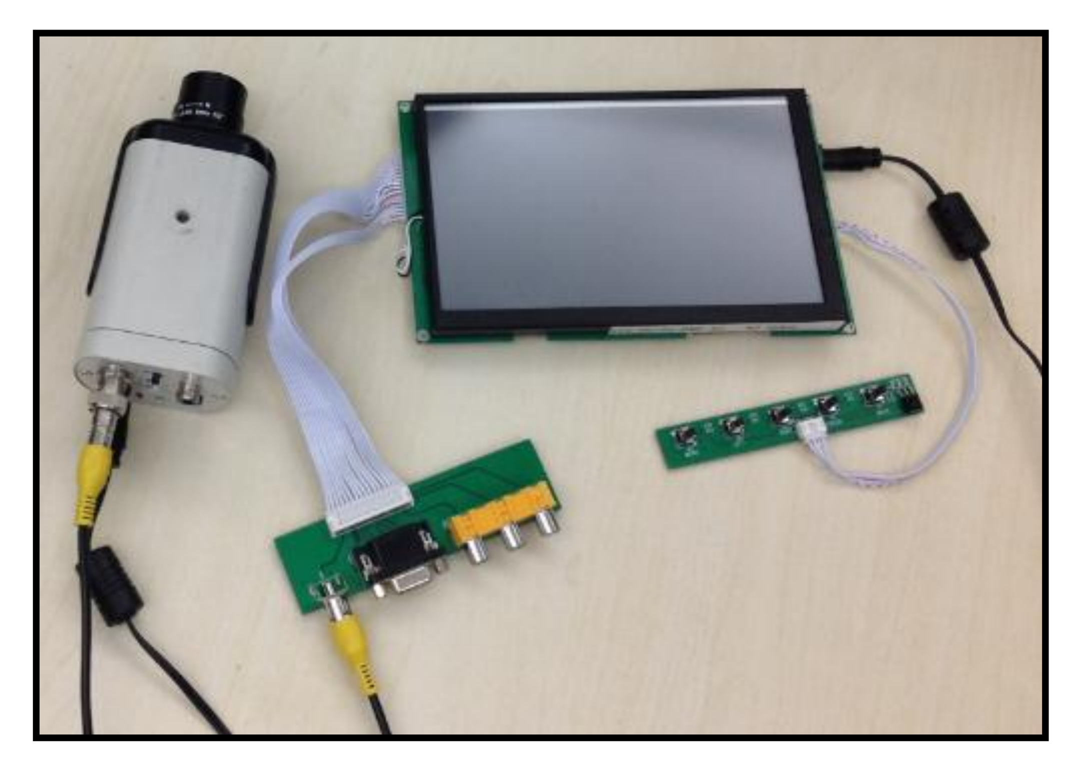
**Step 3**: Attach the Power Adaptor to the Mainboard. Attach the Power Cord to the Power Adaptor and then connect it to an electrical outlet with the appropriate voltage.



**Step 4**: Attach a video cable from the Video Source (e.g. camera) to one of the video connectors on the AL330B-EVB-A1 Mainboard. This example uses the CVBS connector.



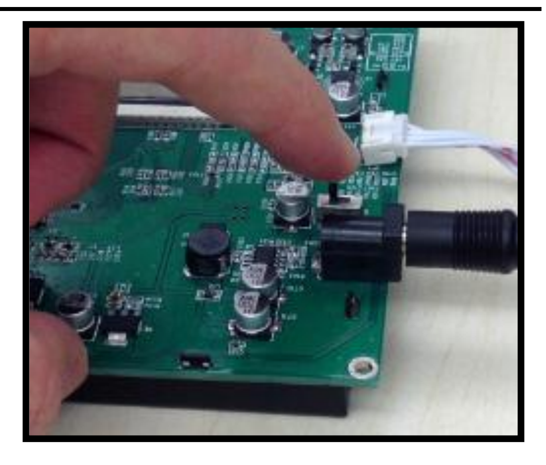
Your setup should appear as below.



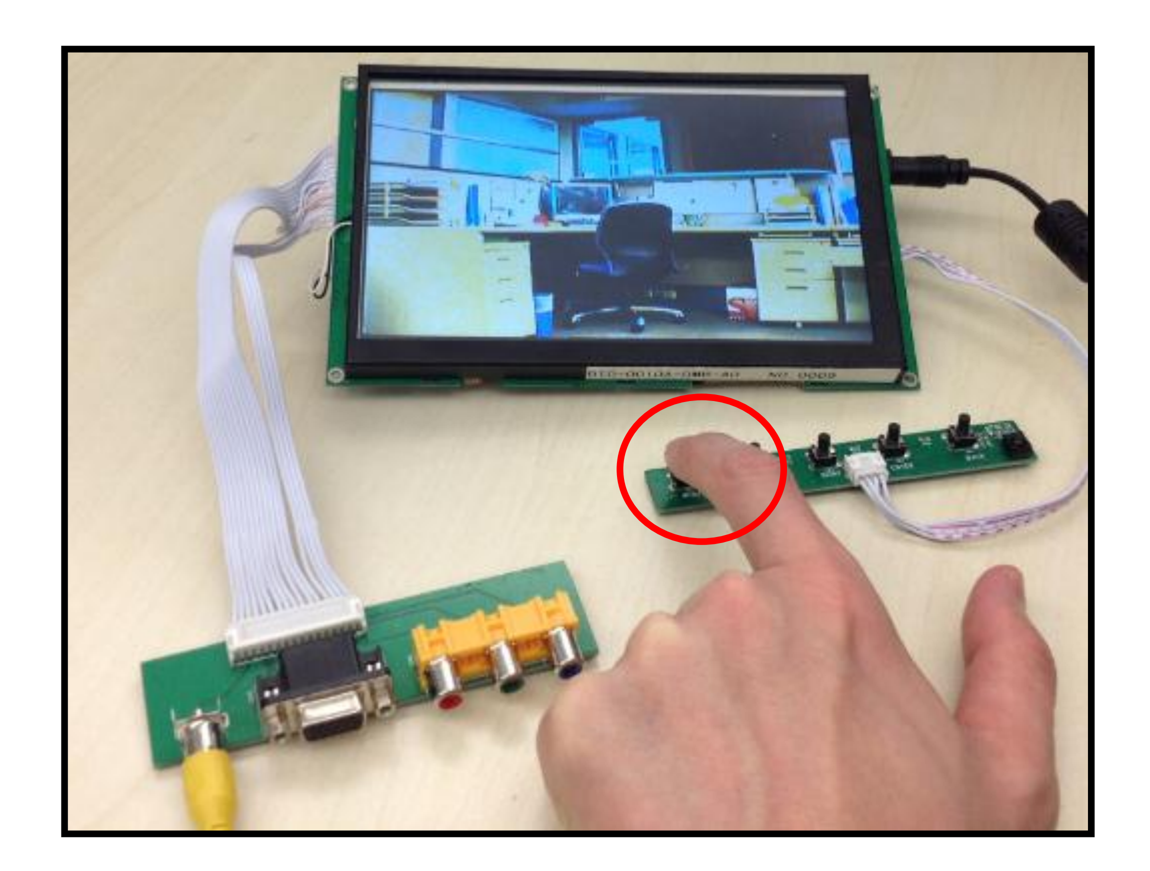
**Step 5**: Supply Power to your Video Source and turn it on.

**Step 6**: Toggle the On/Off switch on the board (located near Power Adapter).
The ON position faces away from the power connector.



Pressing the “SW5” then the video image from the Video Source should almost instantly show up on the LCD display.

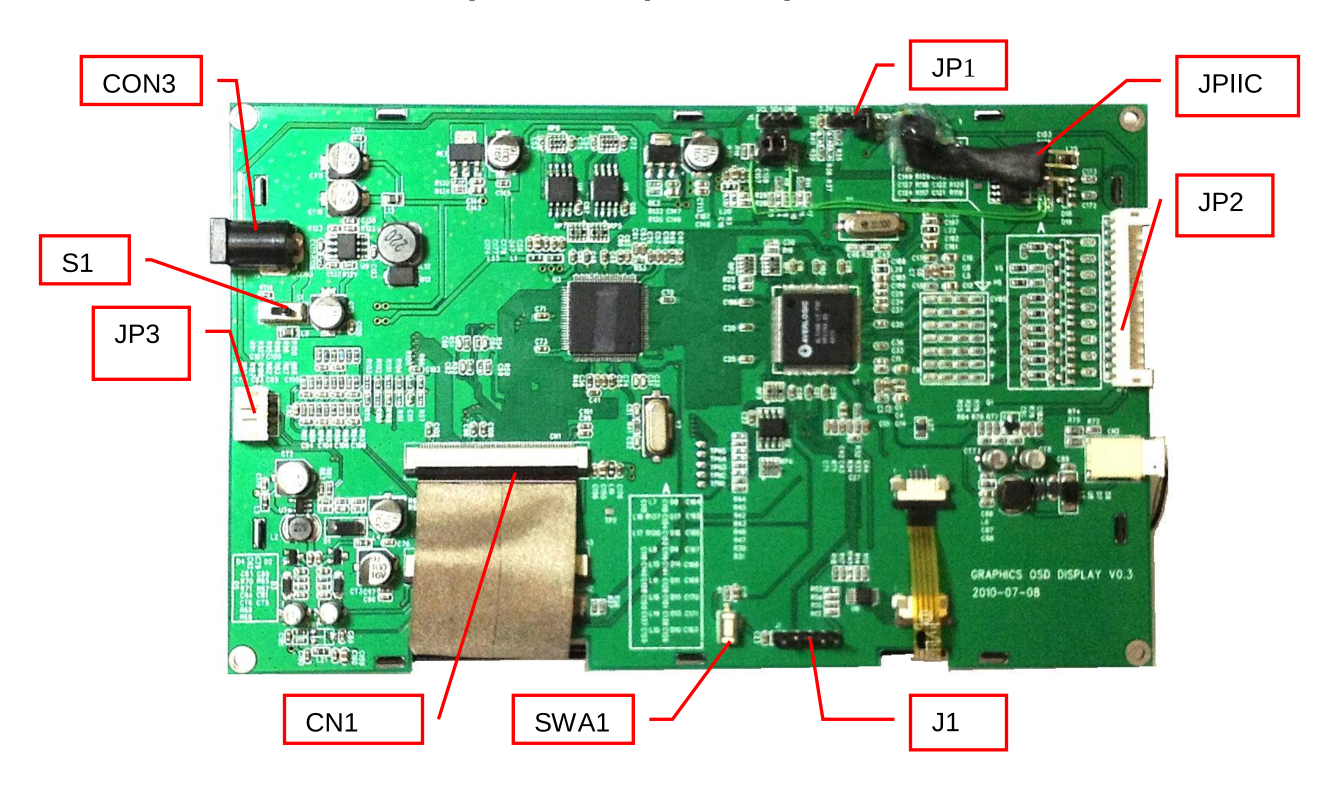


If no video displays, double check all of the video connectors, power connectors and make sure that the Video Source is, in fact, delivering video through the cable.

# 5. Hardware Section

This section describes hardware components in detail.

## 5.1 Main board (back side) Descriptions

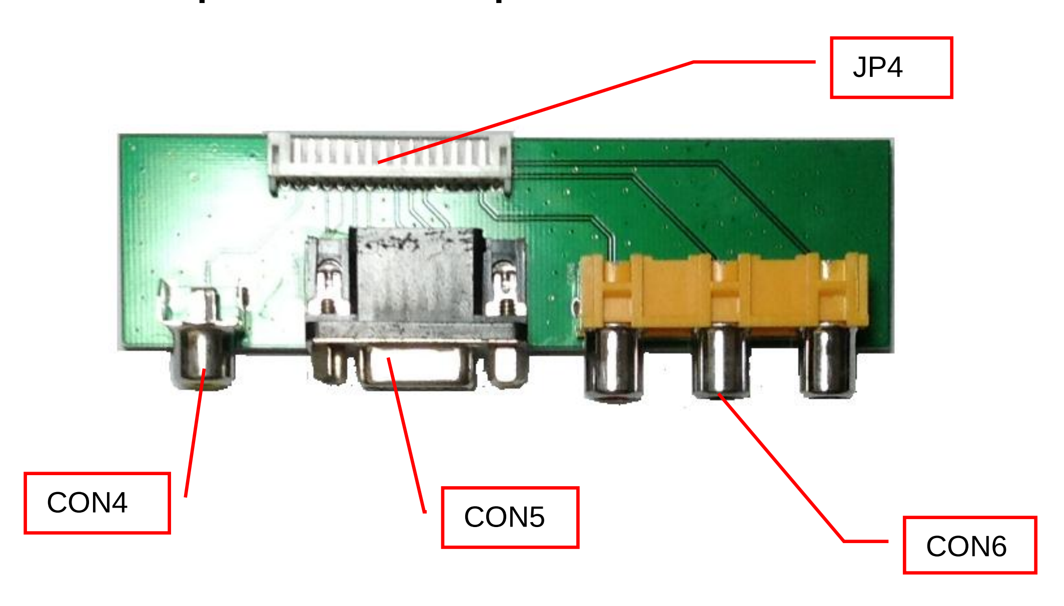



| Function | Label | Description |
|---|---|---|
| DC Power | CON3 | DC 12V Power input |
| Power Switch | S1 | Power On/Off Switch |
| Panel connector | CN1 | Connector for Hannstar 7 inch panel (800*480) |
| Source Input board connector | JP2 | Connects to JP4 connector on Source Input board. |
| Keypad connector | JP3 | Connects to Keypad board. |
| Reset key | SWA1 | Resets the AL330 and internal MCU. |
| SSEL1<br>Download pins | JP1 | Jumper pins 1-2 for normal operations (slave address 0x34).<br>Jumper pins 2-3 for programming mode (slave address 0x38).<br>(Pin 1 is the pin closest to the J5 connector) |

| | | |
|---|---|---|
| IIC Connector | JPIIC | For IIC debug function.<br>Please refer to SSEL1 for selecting IIC slave address. |
| SPI connector | J1 | Connects to the ISP & Debug Tool<br>PIN1=3.3V,PIN2=RXD,PIN3=TXD,PIN4=NC,PIN5=GND<br>(PIN1 is the pin closest to SWA1) |

## 5.2 Source input board Descriptions

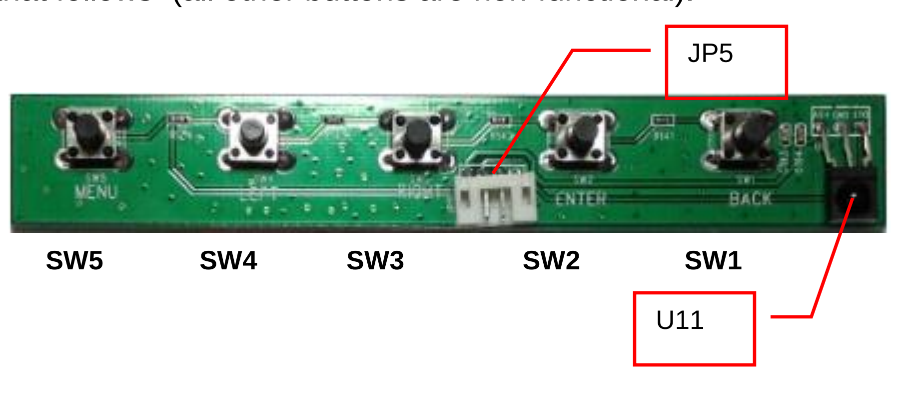



| Function | Label | Description |
|---|---|---|
| Reserved | CON5 | Reserved |
| CVBS | CON4 | CVBS input |
| Component Video | CON4 | Component video input |
| Connector for the Mainboard | JP4 | Connects to JP2 connector on the Mainboard |

## 5.3 Keypad and Remote Controller Descriptions

The Keypad board contains buttons to navigate the OSD (on screen display menus – see next section). This board connects to the Mainboard using a ribbon cable (supplied in packaging).

The Keypad board also contains an IR sensor to allow you to alternately issue OSD menu commands through a Remote Control. The only functional buttons on the remote control are highlighted in the picture below and are listed in the table that follows (all other buttons are non-functional).




| Function | Keypad | Remote | Description |
|---|---|---|---|
| Power On/Off | SW5(MENU) | | Used to turn on or turn off the panel. |
| Left | SW4(LEFT) | | Used to decrease values of brightness. |
| Right | SW3(RIGHT) | | Used to increase values of brightness. |
| Source Select | SW2(ENTER) | | Video source selector. |

| | | | |
|---|---|---|---|
| Debug Mode | SW1(BACK) | EXIT | Enter to Debug MODE. |
| | | MENU | Reserved |
| IR Receiver | U11 | | Receives IR signals from the remote control to be relayed to the Mainboard. You must point the Remote Control at this sensor in order for the IR Receiver to receive the IR signals. |
| Connector for the Mainboard | JP5 | | Uses a ribbon cable to connect to the Mainboard. |

# 6. Miscellaneous

## 6.1 Debug Mode

This board can burn-in code or operate in debug mode. Please refer to the USB Debug Tool User Manual for more information.

# CONTACT INFORMATION

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